

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

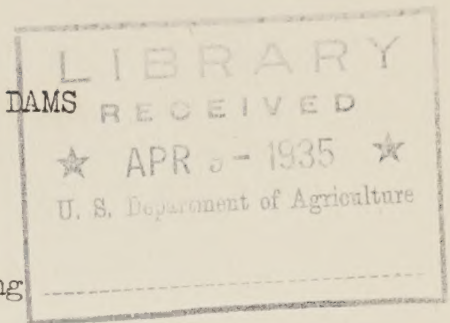
1.9
En 35Sp

SPECIFICATIONS FOR EARTH SOIL-SAVING DAMS

E.C.W. GULLY EROSION CONTROL

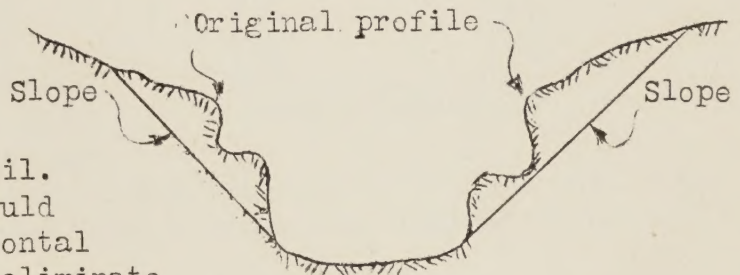
by

L. C. Tschudy, Engineer,
Bureau of Agricultural Engineering
March, 1935

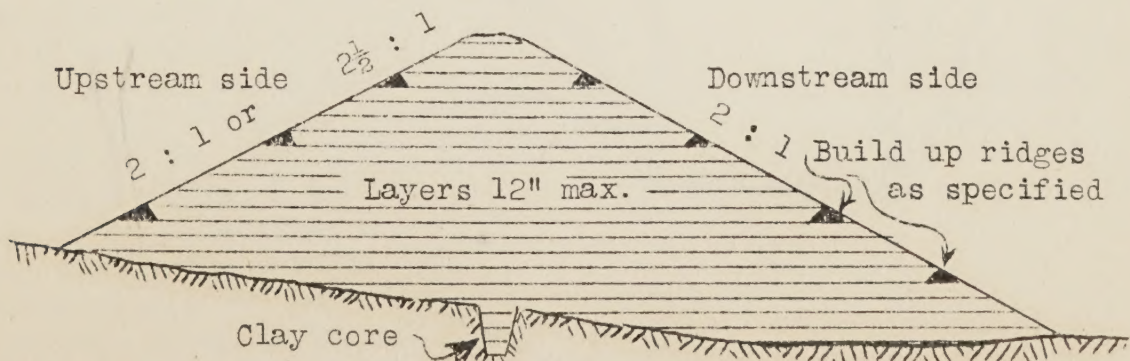


1. All sod, roots and debris must be stripped from the foundation and cast aside clear of the site.

2. The gully banks on the profile of the dam shall be sloped, the slopes varying with the particular location and soil. In general, this slope should not be less than $1\frac{1}{2}$ horizontal to 1 vertical. This will eliminate shrinkage cracks and prevent leaks along these planes.

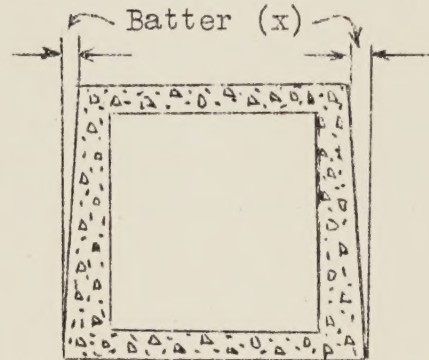


3. A core trench 4 feet deep by $2\frac{1}{2}$ feet wide should be excavated for all earth fills and backfilled by tamping with moist clay. In all cases the trench should be excavated 2 feet into good material, thus cutting off gravel layers. Where the dam rests on rock foundation, a masonry cut-off wall may be necessary. It should cut off flow through crevices and extend across the gully. A core trench will not be required on sand fills if, in the judgment of the superintendent, it is not needed.
4. The dam should be built in layers not exceeding 12 inches in thickness, each layer placed to the full width of the base and compacted. At the end of each week's work a slight ridge should be placed around the edge of the fill. This will collect any rainfall and help to settle the fill. The upstream and downstream slopes shall be 2:1 minimum for heights up to 20 feet. For higher dams the upstream slope shall be 2.5:1 minimum.



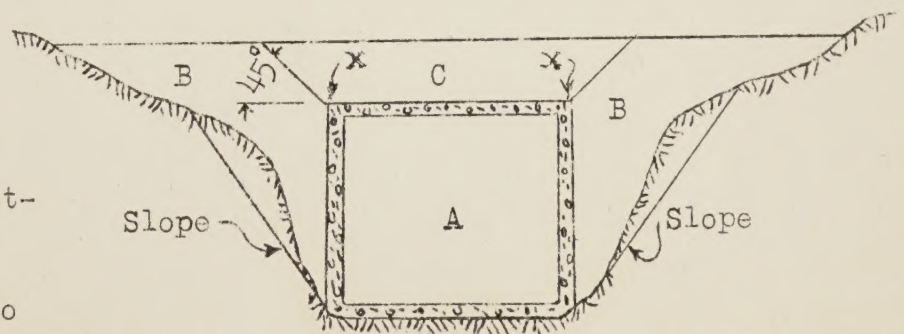
5. A by-pass for floods must be kept open during the construction of the barrel and until the fill is above the barrel. The riser pipe should be at least two diameters below the earth fill at all times or a port hole may be kept open. However, a port hole is not likely to carry more than $1/3$ to $1/2$ of the barrel capacity.

6. Some batter is necessary on the vertical outside walls of the culvert barrel. The batter (x) required may vary but $1/2$ inch per foot of height is suggested. Too much emphasis cannot be placed upon the importance of wetting and tamping all earth fill around the concrete. The success or failure of the structure depends on this. The batter and tamping result in a compact, impervious earth fill against the barrel and help to reduce shear cracks caused by unequal settlement of the fill.



7. Proper bracing of forms is very important and should be closely watched.
8. Reinforcing steel should be as designed and placed as shown on the plans.
9. Concrete must be well spaded to secure thorough mixing. The materials used in the concrete should pass highway specifications.
10. A minimum of 10 percent must be allowed for settlement of all fills.
11. The maximum height for soil-saving dams in E.C.W. is 29 feet.

12. Head spillway:
Construct the fill by wetting and tamping method, as shown on sketch. A is the concrete structure. Make fill B first. After this fill has settled make fill C the last part of the job. This method allows B to settle, C to wedge into shape, avoids the possibility of shear cracks at (x) and allows for passage of water during floods.



13. Laboratory experimental results and plans for soil-saving dams may be obtained through Professor E. R. Jones, E.C.W. Flood Control Director, University of Wisconsin, Madison, Wisconsin.
14. Earth fills must be completed by September 15 or October 1 at the very latest. This will allow for settlement before freezing weather occurs. When fills are made later than this date the top of the dam may freeze and arch away from the interior as it settles, thus forming a crack which may be the cause of failure.

